ECE 3300L.02 Lab 9

Group H
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Lab Objective

- Create PWM module to control LEDS with UPCOUNTER and COMPARATOR
- Switch between different LEDs on Nexys A7 board with a finite state machine
- Use clock manager to control frequency
- Top file to combine it all together

Code Breakdown

- UPCOUNTER.v
  - File to manage counting up using switches
- FSM
  - FInite State Machine used for controlling “profile” or state of use
- Debounce.v
  - Module used to debounce and stabilize button press
- CLKMANAGER.v
  - FIles to create artificial clock
- Comparator.v
  - Compares two values and outputs boolean number
- Pwm.v
  - Uses UPCOUNTER and Comparator to output correct LED sequence
- Top.v
  - File used to bring it all together and link inputs and outputs
- lab9.xdc
  - XDC file used to manage hardware connections to Nexys A7 board

Challenges

- Our biggest challenge was figuring out how to switch the LED output using the FSM, we initially tried using a debouncing mechanism to stabilize the output, which helped but did not completely fix our issue. We think our issue is located in our FSM file having to do with the specifics of switching profiles or states.

Contribution

Up Counter - Sherwin Sathish and Mohamed Hamida

Clock Manager - Mohamed Hamida & Sherwin Sathish

Comparator - Mohamed Hamida

Top FIle - Mohamed Hamida and Sherwin Sathish

FSM - Sherwin Sathish

PWM - Mohamed Hamida and Sherwin Sathish

Debounce- Mohamed Hamida

Lab Report - Sherwin Sathish

Powerpoint Slides - Mohamed Hamida

Demonstration - Mohamed Hamida

Project compiling and uploading - Mohamed Hamida